

Minor Notices.

A PORTFOLIO, larger or smaller, in which the flowering tops of a few plants are precisely, or often fantastically, arranged, seems to be the ideal "herbarium" of the high school and too often of the college teacher of botany. Such an ideal will be fully met by the handsome 7 by 9 portfolio designed by Professor Nelson.¹ It contains 50 folded sheets of thin paper of the size named. The first page of each is intended for a description of the plant, which is to be mounted on the third. Our objections to the design are fundamental. It gives to a student a wholly wrong notion of what a herbarium is, of what it is for, and of how it ought to be prepared. Any student who wishes to form a *real* herbarium will have to have these notions eradicated, and for one who does not, making such a "play" herbarium is worse than useless, since it gives him to think that he has done something right when he has done it wrong.

MR. F. H. KNOWLTON of the National Museum has published a paper on the fossil wood and lignite of the Potomac formation.² The specimens discussed occur in the neighborhood of Washington and Baltimore, in pockets of hard bluish clay. The lignite is more abundant than the silicified wood, and is jet black in color. Sections were rendered transparent by macerating pieces for a week in carbonate of potash, cutting thin sections with a razor and heating these in a watch glass with strong nitric acid until they become yellow, when they were dropped into cold water and afterward mounted in glycerine. Five new species are described with illustrations. The paper is preceded by an important resume of the previous writings on fossil woods.

NOTES AND NEWS.

THE BRITISH MUSEUM has purchased the largest part of the collection of mounted slides left by the late Dr. DeBary.

DR. JULIUS ROLL shows in a recent paper on the *Botanisches Centralblatt* (xli. 241) that the stem leaves of *Sphagna*, which have been relied on as one of the most constant specific characters of this group, are subject to extensive variation.

DR. C. WARNSTORF, of Neuruppin, has just issued the second Century of European Sphagnaceæ. As he is well known as an authority on the numerous and difficult forms of this exceedingly variable genus the specimens will be of decided critical value. Of the commoner species a large number of forms are issued.

¹ NELSON, EDWARD T.—Herbarium and plant descriptions. Boston: Allyn & Bacon. 75 cents.

² KNOWLTON, FRANK HALL.—Fossil wood and lignite of the Potomac formation. (Bulletin 56, U. S. G. S.) pp. 72. pl. 7. 8vo. Washington: Gov. Printing Office, 1889.

MR. W. THOMSON has described a bed of leaves still retaining a distinct green color, found at a depth of twenty-one feet below the surface when digging for the Manchester ship-canal, which must have lain in the same position certainly for some centuries. Dr. E. Schunck has determined this coloring matter to be modified chlorophyll resulting from the action of acids on true chlorophyll.—*Jour. Roy. Mic. Soc.*

ONE OF THE specially commendable features of the *Revue général de Botanique* is the readable résumés of the progress of knowledge of different groups of plants. In the numbers for January and February such a résumé of the work on Algæ, published in 1888 and part of 1889, is contributed by M. Flahault. These articles are of use, probably, to specialists, but they are of great use certainly to those who wish to keep informed of the progress of botany in general.

DRS. FRANK AND TSCHIRCH have in preparation a series of wall charts especially for the illustration of physiological lectures. The charts are of the same size as the well known ones of Kny (69×85 cm.), and are issued by the same firm (Paul Parey, Berlin). The first ten have been issued, and the explanatory text sent out with them indicates that they will prove exceedingly useful for the lecture room and laboratory. The low price (M. 30) puts them in reach of every college in which plant physiology receives the least attention.

DR. J. KUNDIG, docent at the University of Zürich, has devised an apparatus for illustrating on a large scale the growth of the upper internodes of a stem. It consists of a mechanism actuated by a crank handle which causes a series of telescoping brass tubes to extend in such fashion that each tube, representing an internode, moves upward at the same relative rate that internodes grow. As an optical demonstration of the mode of the extension of stems and of the "grand period" of each internode, the apparatus would be exceedingly useful in lectures.

AN APPARATUS for observing very small amounts of transpiration is figured in the January number of the *Revue général de Botanique*. It was devised by Mr. G. Curtel for the study of transpiration during the Norwegian nights. It consists of a large U-tube, into the left arm of which is fixed the plant under observation by means of a rubber cork and soft wax; into the right arm is fixed a graduated capillary tube, bent just above the cork so as to be horizontal when the U-tube is upright. The whole apparatus is filled with water. Readings are taken of the rate at which the end of the water column travels along the graduated tube, together with the other data desired.

THE VARIATION in the behavior of different trees when girdled is well known. Dr. Hartig, in a recent address at a meeting of the Munich Botanical Society, presented his explanation of the phenomena. Those trees in which the conduction of water is almost wholly carried on by the sap wood are able to withstand girdling but a short time, since the progressive formation of heart wood and the drying of the exposed wood on the outside soon cut off the water supply to the parts above. Those trees that employ the heart wood in the conduction of water are able to live for a number of years after girdling. A tree growing in close association with others of the same species often withstands such injury for a much longer time than one isolated from its fellows. This is ascribed to the nourishment of the roots from those of the other trees. Whether the tree forms annually new absorbing roots or is able to absorb by means of the older roots, will also affect its power to resist death from girdling.